

## Developing a cost-effective monitoring program for lightbrown apple moth

Current titles in this LBAM VitiNote series include:

1. Developing a cost-effective monitoring program for lightbrown apple moth
2. Monitoring practice for lightbrown apple moth eggs and caterpillars
3. Options for effective management of lightbrown apple moth

Damage from lightbrown apple moth (LBAM) can vary markedly from year to year, making a basic monitoring program essential in many grape growing regions for cost-effective management.

LBAM is a fairly localised pest. It doesn't migrate from great distances and, if no host plants except grapevines are in and around the vineyard, there is unlikely to be a problem with LBAM.

The main problem with LBAM is its association with Botrytis bunch rot, which causes extensive damage to grapes in some regions and seasons.

However, large numbers of the caterpillars in harvested bunches can also cause contamination problems.

### UNDERSTANDING THE PEST IS THE KEY

#### Favourable conditions for LBAM

- Cool regions and seasons.
- Broadleaf weeds mid-row or in neighbouring paddocks.
- Neighbouring vegetation, including favoured trees (eg. wattles) and native bush.
- Low predator and parasite numbers in the vineyard.
- Susceptible grape varieties eg. Chardonnay, Pinot Noir, Sauvignon Blanc.
- Over-wintering host plants.

#### Deterrents to LBAM

Grapevines do not provide food for LBAM over winter (unless dried grapes are left on the vine).

They survive through winter on broadleaf weeds and trees with leaves. LBAM are unlikely to be a problem if surrounding vegetation consists of:

- grasses or other non-host plants which also support natural predators and parasites; and
- non-favoured trees, usually with needle-like leaves that can't be folded or rolled eg. casuarinas, grevillea, pines.

Other deterrents include:

- selection and use of chemicals which encourage natural predators and parasites; and
- resistant grape varieties eg. Shiraz, Cabernet Sauvignon, Gordo, Tokay.

### MONITORING STRATEGICALLY TO MAKE A DECISION ABOUT WHETHER TO SPRAY

#### Monitoring tips

Systematic monitoring and good record keeping provides useful historical data for comparing between seasons, and will help refine LBAM management strategies.

Target your effort to establish whether there is a potential problem:

- search susceptible varieties first; and
- then the edges of vineyard, near weeds or trees.

**REMEMBER:** Targeted monitoring is not representative of the whole block and further sampling is essential if deciding whether to spray or not.

Keep records, as the timing of LBAM stages is fairly consistent from season to season, as is the location of pockets of higher activity.

### Monitoring moths

Adult moths can be trapped using pheromone traps and port lures. While trap catches do not generally reflect the potential larval population and the need for control, they can provide a useful reminder to monitor for other stages of the pest.

### Eggs and small caterpillars – the best targets

Egg monitoring is the most efficient approach to assessing potential small caterpillar populations. Some important tips to remember are:

- newly hatched caterpillars are very small and difficult to find quickly;
- monitoring whole shoots for eggs and larvae is effective but takes more time; and
- monitoring will need to start before flowering.

Note: egg masses laid on young leaves often detach and drop off as leaves expand and grow, killing the developing larvae.

Application of *Trichogramma* wasps (a biological control option) is reliant on timing wasp releases with the presence of viable LBAM eggs, while chemical sprays targeting small caterpillars should be applied shortly after the first eggs start hatching.

Monitor for larvae after controls are applied to assess the efficiency of the treatment.

### Controlling larger caterpillars in bunches

Larger caterpillars are easy to detect at flowering due to their webbing in bunches, but there are currently no late season sprays registered in Australia for larger caterpillars. Therefore, application of effective control methods which aim to limit the numbers of younger larvae is vital.

## MANAGEMENT CONSIDERATIONS

### Population stages and timing

- There are generally two LBAM generations in one season. The first generation lays eggs in the vines shortly after leaves unfold in the spring and the second generation starts around veraison.
- If the early season population in a vineyard is kept under control, a substantial second generation is less likely. There may be exceptions if LBAM move in from adjacent vegetation.

### Pesticide residues and beneficials

- There are several pesticide options for spraying at flowering which are effective on larger caterpillars. However, the risk of pesticide residues at harvest limits the options to only targeting small caterpillars in the second generation.
- Using 'soft' sprays protects LBAM predators and parasites, and helps prevent risk of late-season problems.

### Damage and Botrytis risk

- LBAM does not cause substantial feeding damage to berries; the real risk is due to associated Botrytis damage if there are late season rains.
- Monitoring which targets small caterpillars and careful timing of LBAM sprays later in the season is an important consideration for growers at risk from Botrytis.

## Cost

- The cost of applying a treatment (chemical or biological) needs to be considered against the potential cost, in terms of crop loss or impacts on quality, of no treatment.

√ or X	LBAM monitoring checklist
	Monitor strategically for LBAM egg masses and larvae.
	Monitor other LBAM host plants in and adjacent to the vineyard to assess potential contribution to LBAM problem.
	Train vineyard employees to monitor for LBAM while working in the vineyard.
	Record presence of beneficial insects.
	Keep records of monitoring results and controls applied.
	Monitor for larvae after controls applied to assess effectiveness of treatments.

## FURTHER INFORMATION

*Product or service information is provided to inform the viticulture industry about available resources and should not be interpreted as an endorsement.*

A useful reference is:

- Nicholas P, Magarey PA and Wachtel M, (Eds.) (1994) Diseases and pests, Grape Production Series 1, Hyde Park Press, Adelaide (a glove box edition of this book is also available).

This publication is available from Winetitles, 08 8292 0888, or visit [www.winetitles.com.au](http://www.winetitles.com.au).

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## ACKNOWLEDGEMENTS

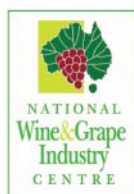
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